PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	**Kaneyoshi HAYASHI**
Serial. No.	:	**09/981,541**
Filing Date	:	**10/15/2001**
For	:	**RUBBER COMPOSITION**
Examiner	:	**James J. Seidleck**
Art Unit	:	**1711**

Honorable Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF KANEYOSHI HAYASHI UNDER 37 CFR §1.132

I, Kaneyoshi Hayashi, a citizen of Japan, do hereby declare the followings:

1. I am the sole inventor of the above-referenced patent application.

2. I received a Bachelor of Science degree from Department of Industrial Chemistry in Faculty of Engineering in Kogakuin University, Tokyo, Japan at March in 1967. I have been studying for an Ph.D. at Graduate School of Bio-Applications and Systems Engineering of Tokyo University of Agriculture & Technology as a part time student since April in 2002.

3. From April in 1967 through the present, I have been working for SANKEI GIKEN Co. Ltd. as President.

4. I have reviewed the Office Action dated June 19, 2003 in the above-referenced

being anticipated by Yau, S. (USP 5080942) and 103(a) as being unpatentable over Yau, S. (USP 5080492) in view of Patel, R (USP 4654402). However, I respectfully disagree with the Examiner's prior assertions as supported by experimental results presented in the attached Appendix B.

5. Appendix B provides experimental results from experiments that I have conducted. These results contain further supportive data showing that the use of carbon black, as taught in Yau, would affect the basic and novel characteristics of the invention recited in the pending claims. More particularly, I believe the data establishes that the present invention provides unique properties in resistance to chlorine, unlike the technology taught in Yau or Patel. In my opinion, the lack of polybutene in sample Y does not substantially affect this conclusion. This is because chlorine compound adsorbed on carbon black still deteriorates the rubber compound despite the existence of polybutene. Thus, I believe that the present invention would not be obvious to one of ordinary skill in the art.

6. Based on my knowledge and experience as one of skill in the art, it is my opinion that results similar to the foregoing would be obtained with other formulations within the scope of the claims. It is also my opinion that similar results would also be obtained for other compositions prepared in accordance with the teachings of the prior art.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the

United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

17. SEP. 2003

Date

Kaneyoshi HAYASHI

Appendix B

1. Sample Preparation

An example of rubber component according to the present invention was prepared as shown in the specification of the application. The composition of the example is summarized in Table I. A comparative example was also prepared as shown in the specification except that black carbon was combined instead of white carbon.

Table I. Sample Compositions

	Example X	Example Y
EPDM	100	100
ZnO	2–5	2–5
Stearic acid	0.5–2	0.5–2
Polybutene	5–40	---
Processing oil	---	15
Clay	10–60	---
Vulcanizer (S)	0.5–3	0.5–3
CBS	1–3	1–3
White carbon	10–50	---
Carbon black	---	10–50
Silane coupler	0.5–6	---

Here, the example X has the same composition as Example 1 in the specification.

2. Chlorine resistance test

The samples were placed in the water with the chlorine concentration of 3000 and 1500 ppm at 80 Celsius. The samples were examined by the appearance, the weight, and the hardness at predetermined periods of time. The appearance was observed with a microscope of 50 magnifications.

3. Experimental results

The experimental results are summarized in Table II.

Table II Experimental Results

		before test	1 day	2 days	3 days	4 days
Sample X	Hardness	60	58		57	
(3000ppm)	Weight change	–	+6.7%		+8.2%	
Sample X	Hardness	60	60	60		58
(1500ppm)	Weight change	–	+2.1%	+4.1%		+5.6%
Sample Y	Hardness	56	58		58	
(3000ppm)	Weight change	–	+11.4%		+43.8%	
Sample Y	Hardness	56	56	60		60
(1500ppm)	Weight change	–	+11.5%	+14.6%		+14.6%

(chlorine concentration)

As shown in Table II, it is clear that the samples subject to higher chlorine concentrations for longer period of time have more weight gain, which means the samples were deteriorated. However, if Sample X without carbon black is compared to Sample Y with carbon black, Sample X has much less weight gain in either chlorine concentration, which implies that existence of carbon black cause severer damages to the samples with both chlorine concentrations. In the appearance examination, Sample X kept the original appearance whereas Sample Y in either concentration of chlorine had cracks on the surface after three or two days.